

SEQUENCE LISTING

<110> Japan Science and Technology Agency

<120> The functional domain and its associated molecule of DOCK2 which is essential for lymphocyte migration

<130> A031-44PCT

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<141>

<150> JP P2002-342683

<151> 2002-11-26

<160> 7

<170> PatentIn Ver. 2.1

<210> 1

<211> 1828

<212> PRT

<213> Mus musculus

<400> 1

Met Ala Pro Trp Arg Lys Thr Asp Lys Glu Arg His Gly Val Ala Ile

1

5

10

15

Tyr Asn Phe Gln Gly Ser Glu Ala Gln His Leu Thr Leu Gln Ile Gly

20

25

30

Asp Val Val Arg Ile Gln Glu Thr Cys Gly Asp Trp Tyr Arg Gly Tyr

35

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45

Leu Ile Lys His Lys Leu Ser Gln Gly Ile Phe Pro Thr Ser Phe Ile

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55

60

His Leu Lys Glu Val Thr Val Glu Lys Arg Arg Asn Ile Glu Asn Ile

65

70

75

80

Ile Pro Ala Glu Ile Pro Leu Ala Gln Glu Val Thr Thr Thr Leu Trp

85

90

95

Glu Trp Gly Ser Ile Trp Lys Gln Leu Tyr Val Ala Ser Lys Lys Glu

100

105

110

Arg Phe Leu Gln Val Gln Ser Met Met Tyr Asp Leu Met Glu Trp Arg

115

120

125

Ser Gln Leu Leu Ser Gly Thr Leu Pro Lys Asp Glu Leu Lys Glu Leu

130

135

140

Lys Gln Lys Val Thr Ser Lys Ile Asp Tyr Gly Asn Lys Ile Leu Glu

145

150

155

160

Leu Asp Leu Ile Val Arg Asp Glu Asp Gly Asn Ile Leu Asp Pro Asp

165

170

175

Lys Thr Ser Val Ile Ser Leu Phe His Ala His Glu Glu Ala Thr Tyr

180

185

190

Lys Ile Thr Glu Arg Ile Lys Glu Glu Met Ser Lys Asp Gln Pro Asp

195

200

205

Tyr Gly Val Tyr Ser Arg Ile Ser Ser Ser Pro Thr His Ser Leu Tyr

210

215

220

Val Phe Val Arg Asn Phe Val Cys Arg Ile Gly Glu Asp Ala Glu Leu

225

230

235

240

Phe Met Ser Leu Tyr Asp Pro His Lys Gln Thr Val Ile Ser Glu Asn

245

250

255

Tyr Leu Val Arg Trp Gly Ser Lys Gly Phe Pro Lys Glu Ile Glu Met

260

265

270

Leu Asn Asn Leu Lys Val Val Phe Thr Asp Leu Gly Asn Lys Asp Leu

275

280

285

Asn Arg Asp Lys Ile Phe Leu Ile Cys Gln Ile Val Arg Ile Gly Lys

290

295

300

Met Asp Leu Lys Asp Ile Asn Ala Lys Lys Cys Thr Gln Gly Leu Arg
305 310 315 320

Arg Pro Phe Gly Val Ala Val Met Asp Ile Thr Asp Ile Ile Lys Gly
325 330 335

Lys Ala Glu Ser Asp Glu Glu Lys Gln His Phe Ile Pro Phe His Pro
340 345 350

Val Ser Ala Glu Asn Asp Phe Leu His Ser Leu Leu Gly Lys Val Ile
355 360 365

Ala Ser Lys Gly Asp Ser Gly Gly Gln Gly Leu Trp Val Thr Met Lys
370 375 380

Met Leu Val Gly Asp Ile Ile Gln Ile Arg Lys Asp Tyr Pro His Leu
385 390 395 400

Val Asp Arg Thr Thr Val Val Ala Arg Lys Leu Gly Phe Pro Glu Ile
405 410 415

Ile Met Pro Gly Asp Val Arg Asn Asp Ile Tyr Ile Thr Leu Leu Gln
420 425 430

Gly Asp Phe Asp Lys Tyr Thr Lys Thr Thr Gln Arg Asn Val Glu Val
435 440 445

Ile Met Cys Val Cys Thr Glu Asp Gly Lys Val Leu Pro Asn Ala Ile

450

455

460

Cys Val Gly Ala Gly Asp Lys Ala Met Asn Glu Tyr His Ser Val Val

465

470

475

480

Tyr Tyr Gln Val Lys Gln Pro Arg Trp Met Glu Thr Val Lys Val Ala

485

490

495

Val Pro Ile Glu Asp Met Gln Arg Ile His Leu Arg Phe Met Phe Arg

500

505

510

His Arg Ser Ser Leu Glu Ser Lys Asp Lys Gly Glu Lys Asn Phe Ala

515

520

525

Met Ser Tyr Val Lys Leu Met Lys Glu Asp Gly Thr Thr Leu His Asp

530

535

540

Gly Tyr His Glu Leu Val Val Leu Lys Gly Asp Ser Lys Lys Met Glu

545

550

555

560

Asp Ala Ser Ala Tyr Leu Thr Leu Pro Ser Tyr Arg His Pro Val Glu

565

570

575

Asn Lys Gly Ala Thr Leu Ser Arg Ser Ser Ser Ser Val Gly Gly Leu

580

585

590

Ser Val Ser Ser Arg Asp Val Phe Ser Ile Ser Thr Leu Val Cys Ser

595

600

605

Thr Lys Leu Thr Gln Asn Val Gly Leu Leu Gly Leu Leu Lys Trp Arg

610

615

620

Met Lys Pro Gln Leu Leu Gln Glu Asn Leu Glu Lys Leu Lys Ile Val

625

630

635

640

Asp Gly Glu Glu Val Val Lys Phe Leu Gln Asp Thr Leu Asp Ala Leu

645

650

655

Phe Asn Ile Met Met Glu His Ser Gln Ser Asn Glu Tyr Asp Ile Leu

660

665

670

Val Phe Asp Ala Leu Ile Tyr Ile Ile Gly Leu Ile Ala Asp Arg Lys

675

680

685

Phe Gln His Phe Asn Thr Val Leu Glu Ala Tyr Ile Gln Gln His Phe

690

695

700

Ser Ala Thr Leu Ala Tyr Lys Lys Leu Met Thr Val Leu Lys Thr Tyr

705

710

715

720

Leu Asp Thr Ser Ser Arg Gly Glu Gln Cys Glu Pro Ile Leu Arg Thr

725

730

735

Leu Lys Ala Leu Glu Tyr Val Phe Lys Phe Ile Val Arg Ser Arg Thr

740

745

750

Leu Phe Ser Gln Leu Tyr Glu Gly Lys Glu Gln Met Glu Phe Glu Glu

755

760

765

Ser Met Arg Arg Leu Phe Glu Ser Ile Asn Asn Leu Met Lys Ser Gln

770

775

780

Tyr Lys Thr Thr Ile Leu Leu Gln Val Ala Ala Leu Lys Tyr Ile Pro

785

790

795

800

Ser Val Leu His Asp Val Glu Thr Val Phe Asp Ala Lys Leu Leu Ser

805

810

815

Gln Leu Leu Tyr Glu Phe Tyr Thr Cys Ile Pro Pro Val Lys Leu Gln

820

825

830

Lys Gln Lys Val Gln Ser Met Asn Glu Ile Val Gln Ser Asn Leu Phe

835

840

845

Lys Lys Gln Glu Cys Arg Asp Ile Leu Leu Pro Val Ile Thr Lys Glu

850

855

860

Leu Lys Glu Leu Leu Glu Gln Arg Asp Asp Gly Gln His Gln Ala Glu

865

870

875

880

Lys Lys His Cys Val Glu Leu Leu Asn Ser Ile Leu Glu Val Leu Ser

885

890

895

Cys Gln Asp Ala Ala Phe Thr Tyr Asp His Ile Gln Glu Ile Met Val

900

905

910

Gln Leu Leu Arg Thr Val Asn Arg Thr Val Ile Thr Met Gly Arg Asp

915

920

925

His Ala Leu Ile Ser His Phe Glu Ala Cys Met Thr Ala Ile Leu Asp

930

935

940

Gln Met Gly Asp Gln His Tyr Ser Phe Tyr Ile Glu Thr Phe Gln Thr

945

950

955

960

Ser Ser Asp Leu Val Asp Phe Leu Met Glu Thr Phe Ile Met Phe Lys

965

970

975

Asp Leu Ile Gly Lys Asn Val Tyr Pro Gly Asp Trp Met Ala Met Ser

980

985

990

Met Val Gln Asn Arg Val Phe Leu Arg Ala Ile Asn Lys Phe Ala Glu

995

1000

1005

Thr Met Asn Gln Lys Phe Leu Glu His Thr Ser Phe Glu Phe Gln Leu

1010

1015

1020

Trp Asn Asn Tyr Phe His Leu Ala Val Ala Phe Ile Thr Gln Asp Ser
1025 1030 1035 1040

Leu Gln Leu Glu Gln Phe Thr His Ala Lys Tyr Asn Lys Ile Leu Asn
1045 1050 1055

Lys Tyr Gly Asp Met Arg Arg Leu Ile Gly Phe Ser Ile Arg Asp Met
1060 1065 1070

Trp Tyr Lys Leu Gly Gln Asn Lys Ile Cys Phe Ile Pro Gly Met Val
1075 1080 1085

Gly Pro Ile Leu Glu Met Thr Leu Ile Pro Glu Ala Glu Leu Arg Lys
1090 1095 1100

Ala Thr Ile Pro Ile Phe Phe Asp Met Met Leu Cys Glu Tyr Gln Arg
1105 1110 1115 1120

Thr Gly Ala Phe Lys Lys Phe Glu Asn Glu Ile Ile Leu Lys Leu Asp
1125 1130 1135

His Glu Val Glu Gly Gly Arg Gly Asp Glu Gln Tyr Met Gln Leu Leu
1140 1145 1150

Glu Ser Ile Leu Met Glu Cys Thr Ala Glu His Pro Thr Ile Ala Lys
1155 1160 1165

Ser Val Glu Asn Phe Val Ser Leu Val Lys Gly Leu Leu Glu Lys Leu

1170

1175

1180

Leu Asp Tyr Arg Gly Val Met Thr Asp Glu Ser Lys Asp Asn Arg Met

1185

1190

1195

1200

Ser Cys Thr Val Asn Leu Leu Asn Phe Tyr Lys Asp Asn Asn Arg Glu

1205

1210

1215

Glu Met Tyr Ile Arg Tyr Leu Tyr Lys Leu Arg Asp Leu His Leu Asp

1220

1225

1230

Cys Glu Asn Tyr Thr Glu Ala Ala Tyr Thr Leu Leu Leu His Thr Trp

1235

1240

1245

Leu Leu Lys Trp Ser Asp Glu Gln Cys Ala Ser Gln Val Met Gln Thr

1250

1255

1260

Gly Gln Gln His Pro Gln Thr His Arg Gln Leu Lys Glu Thr Leu Tyr

1265

1270

1275

1280

Glu Thr Ile Ile Gly Tyr Phe Asp Lys Gly Lys Met Trp Glu Glu Ala

1285

1290

1295

Ile Ser Leu Cys Lys Glu Leu Ala Glu Gln Tyr Glu Met Glu Ile Phe

1300

1305

1310

Asp Tyr Glu Leu Leu Ser Gln Asn Leu Thr Gln Gln Ala Lys Phe Tyr

1315

1320

1325

Glu Asn Ile Met Lys Ile Leu Arg Thr Lys Pro Asp Tyr Phe Ala Val

1330

1335

1340

Gly Tyr Tyr Gly Gln Gly Phe Pro Ser Phe Leu Arg Asn Lys Val Phe

1345

1350

1355

1360

Ile Tyr Arg Gly Lys Glu Tyr Glu Arg Arg Glu Asp Phe Gln Met Gln

1365

1370

1375

Leu Leu Ser Gln Phe Pro Asn Ala Glu Lys Met Asn Thr Thr Ser Ala

1380

1385

1390

Pro Gly Asp Asp Val Arg Asn Ala Pro Gly Gln Tyr Ile Gln Cys Phe

1395

1400

1405

Thr Val Gln Pro Val Leu Asp Glu His Pro Arg Phe Lys Asn Lys Pro

1410

1415

1420

Val Pro Asp Gln Ile Ile Asn Phe Tyr Lys Ser Asn Tyr Val Gln Lys

1425

1430

1435

1440

Phe His Tyr Ser Arg Pro Val Arg Arg Gly Lys Val Asp Pro Glu Asn

1445

1450

1455

Glu Phe Ala Ser Met Trp Ile Glu Arg Thr Ser Phe Leu Thr Ala Tyr

1460

1465

1470

Lys Leu Pro Gly Ile Leu Arg Trp Phe Glu Val Val His Met Ser Gln

1475

1480

1485

Thr Thr Ile Ser Pro Leu Glu Asn Ala Ile Glu Thr Met Ser Thr Val

1490

1495

1500

Asn Glu Lys Ile Leu Met Met Ile Asn Gln Tyr Gln Ser Asp Glu Ser

1505

1510

1515

1520

Leu Pro Ile Asn Pro Leu Ser Met Leu Leu Asn Gly Ile Val Asp Pro

1525

1530

1535

Ala Val Met Gly Gly Phe Ala Lys Tyr Glu Lys Ala Phe Phe Thr Glu

1540

1545

1550

Glu Tyr Ser Arg Glu His Pro Glu Asp Gln Asp Lys Leu Ser His Leu

1555

1560

1565

Lys Asp Leu Ile Ala Trp Gln Ile Pro Phe Leu Gly Ala Gly Ile Lys

1570

1575

1580

Ile His Glu Lys Arg Val Ser Asp Asn Leu Arg Pro Phe His Asp Arg

1585

1590

1595

1600

Met Glu Glu Cys Phe Lys Asn Leu Lys Met Lys Val Glu Lys Glu Tyr

1605

1610

1615

Gly Val Arg Glu Met Pro Asp Phe Glu Asp Arg Arg Val Gly Arg Pro

1620

1625

1630

Arg Ser Met Leu Arg Ser Tyr Arg Gln Met Ser Val Ile Ser Leu Ala

1635

1640

1645

Ser Met His Ser Asp Cys Ser Thr Pro Ser Lys Val Pro Ala Glu Ser

1650

1655

1660

Phe Asp Leu Glu Ser Ala Pro Pro Lys Thr Pro Lys Val Glu Glu Glu

1665

1670

1675

1680

Pro Ile Ser Pro Gly Ser Thr Leu Pro Glu Val Lys Leu Arg Arg Ser

1685

1690

1695

Lys Lys Arg Thr Lys Arg Ser Ser Val Val Phe Ala Asp Glu Lys Ala

1700

1705

1710

Ala Thr Glu Ser Asp Leu Lys Arg Leu Ser Arg Lys Gln Glu Phe Met

1715

1720

1725

Ser Asp Thr Asn Leu Ser Glu His Ala Ala Ile Pro Ala Arg Val Ser

1730

1735

1740

Ile Leu Ser Gln Met Ser Phe Ala Ser Gln Ser Met Pro Thr Ile Pro
1745 1750 1755 1760

Ala Leu Thr Leu Ser Val Ala Gly Val Pro Gly Leu Asp Glu Ala Asn
1765 1770 1775

Thr Ser Pro Arg Leu Ser Gln Thr Phe Phe Gln Val Ser Asp Gly Asp
1780 1785 1790

Lys Lys Thr Leu Lys Lys Lys Lys Val Asn Gln Phe Phe Lys Thr Met
1795 1800 1805

Leu Ala Ser Lys Ser Ser Glu Glu Ser Lys Gln Ile Pro Asp Phe Leu
1810 1815 1820

Ser Thr Asn Met
1825

<210> 2

<211> 1830

<212> PRT

<213> Homo sapiens

<400> 2

Met Ala Pro Trp Arg Lys Ala Asp Lys Glu Arg His Gly Val Ala Ile

1	5	10	15
Tyr Asn Phe Gln Gly Ser Gly Ala Pro Gln Leu Ser Leu Gln Ile Gly			
20	25	30	
Asp Val Val Arg Ile Gln Glu Thr Cys Gly Asp Trp Tyr Arg Gly Tyr			
35	40	45	
Leu Ile Lys His Lys Met Leu Gln Gly Ile Phe Pro Lys Ser Phe Ile			
50	55	60	
His Ile Lys Glu Val Thr Val Glu Lys Arg Arg Asn Thr Glu Asn Ile			
65	70	75	80
Ile Pro Ala Glu Ile Pro Leu Ala Gln Glu Val Thr Thr Thr Leu Trp			
85	90	95	
Glu Trp Gly Ser Ile Trp Lys Gln Leu Tyr Val Ala Ser Lys Lys Glu			
100	105	110	
Arg Phe Leu Gln Val Gln Ser Met Met Tyr Asp Leu Met Glu Trp Arg			
115	120	125	
Ser Gln Leu Leu Ser Gly Thr Leu Pro Lys Asp Glu Leu Lys Glu Leu			
130	135	140	
Lys Gln Lys Val Thr Ser Lys Ile Asp Tyr Gly Asn Lys Ile Leu Glu			

145	150	155	160
Leu Asp Leu Ile Val Arg Asp Glu Asp Gly Asn Ile Leu Asp Pro Asp			
165	170	175	
Asn Thr Ser Val Ile Ser Leu Phe His Ala His Glu Glu Ala Thr Asp			
180	185	190	
Lys Ile Thr Glu Arg Ile Lys Glu Glu Met Ser Lys Asp Gln Pro Asp			
195	200	205	
Tyr Ala Met Tyr Ser Arg Ile Ser Ser Ser Pro Thr His Ser Leu Tyr			
210	215	220	
Val Phe Val Arg Asn Phe Val Cys Arg Ile Gly Glu Asp Ala Glu Leu			
225	230	235	240
Phe Met Ser Leu Tyr Asp Pro Asn Lys Gln Thr Val Ile Ser Glu Asn			
245	250	255	
Tyr Leu Val Arg Trp Gly Ser Arg Gly Phe Pro Lys Glu Ile Glu Met			
260	265	270	
Leu Asn Asn Leu Lys Val Val Phe Thr Asp Leu Gly Asn Lys Asp Leu			
275	280	285	
Asn Arg Asp Lys Ile Tyr Leu Ile Cys Gln Ile Val Arg Val Gly Lys			

290	295	300	
Met Asp Leu Lys Asp Thr Gly Ala Lys Lys Cys Thr Gln Gly Leu Arg			
305	310	315	320
Arg Pro Phe Gly Val Ala Val Met Asp Ile Thr Asp Ile Ile Lys Gly			
	325	330	335
Lys Ala Glu Ser Asp Glu Glu Lys Gln His Phe Ile Pro Phe His Pro			
	340	345	350
Val Thr Ala Glu Asn Asp Phe Leu His Ser Leu Leu Gly Lys Val Ile			
	355	360	365
Ala Ser Lys Gly Asp Ser Gly Gly Gln Gly Leu Trp Val Thr Met Lys			
	370	375	380
Met Leu Val Gly Asp Ile Ile Gln Ile Arg Lys Asp Tyr Pro His Leu			
385	390	395	400
Val Asp Arg Thr Thr Val Val Ala Arg Lys Leu Gly Phe Pro Glu Ile			
	405	410	415
Ile Met Pro Gly Asp Val Arg Asn Asp Ile Tyr Ile Thr Leu Leu Gln			
	420	425	430
Gly Asp Phe Asp Lys Tyr Asn Lys Thr Thr Gln Arg Asn Val Glu Val			

	435	440	445
Ile Met Cys Val Cys Ala Glu Asp Gly Lys Thr Leu Pro Asn Ala Ile			
450	455	460	
Cys Val Gly Ala Gly Asp Lys Pro Met Asn Glu Tyr Arg Ser Val Val			
465	470	475	480
Tyr Tyr Gln Val Lys Gln Pro Arg Trp Met Glu Thr Val Lys Val Ala			
	485	490	495
Val Pro Ile Glu Asp Met Gln Arg Ile His Leu Arg Phe Met Phe Arg			
500	505	510	
His Arg Ser Ser Leu Glu Ser Lys Asp Lys Gly Glu Lys Asn Phe Ala			
515	520	525	
Met Ser Tyr Val Lys Leu Met Lys Glu Asp Gly Thr Thr Leu His Asp			
530	535	540	
Gly Phe His Asp Leu Val Val Leu Lys Gly Asp Ser Lys Lys Met Glu			
545	550	555	560
Asp Ala Ser Ala Tyr Leu Thr Leu Pro Ser Tyr Arg His His Val Glu			
	565	570	575
Asn Lys Gly Ala Thr Leu Ser Arg Ser Ser Ser Ser Val Gly Gly Leu			

	580		585		590
Ser Val Ser Ser Arg Asp Val Phe Ser Ile Ser Thr Leu Val Cys Ser					
	595		600		605
Thr Lys Leu Thr Gln Asn Val Gly Leu Leu Gly Leu Leu Lys Trp Arg					
	610		615		620
Met Lys Pro Gln Leu Leu Gln Glu Asn Leu Glu Lys Leu Lys Ile Val					
	625		630		635
					640
Asp Gly Glu Glu Val Val Lys Phe Leu Gln Asp Thr Leu Asp Ala Leu					
		645		650	655
Phe Asn Ile Met Met Glu His Ser Gln Ser Asp Glu Tyr Asp Ile Leu					
	660		665		670
Val Phe Asp Ala Leu Ile Tyr Ile Ile Gly Leu Ile Ala Asp Arg Lys					
	675		680		685
Phe Gln His Phe Asn Thr Val Leu Glu Ala Tyr Ile Gln Gln His Phe					
	690		695		700
Ser Ala Thr Leu Ala Tyr Lys Lys Leu Met Thr Val Leu Lys Thr Tyr					
	705		710		715
					720
Leu Asp Thr Ser Ser Arg Gly Glu Gln Cys Glu Pro Ile Leu Arg Thr					

725	730	735
Leu Lys Ala Leu Glu Tyr Val Phe Lys Phe Ile Val Arg Ser Arg Thr		
740	745	750
Leu Phe Ser Gln Leu Tyr Glu Gly Lys Glu Gln Met Glu Phe Glu Glu		
755	760	765
Ser Met Arg Arg Leu Phe Glu Ser Ile Asn Asn Leu Met Lys Ser Gln		
770	775	780
Tyr Lys Thr Thr Ile Leu Leu Gln Val Ala Ala Leu Lys Tyr Ile Pro		
785	790	795
		800
Ser Val Leu His Asp Val Glu Met Val Phe Asp Ala Lys Leu Leu Ser		
805	810	815
Gln Leu Leu Tyr Glu Phe Tyr Thr Cys Ile Pro Pro Val Lys Leu Gln		
820	825	830
Lys Gln Lys Val Gln Ser Met Asn Glu Ile Val Gln Ser Asn Leu Phe		
835	840	845
Lys Lys Gln Glu Cys Arg Asp Ile Leu Leu Pro Val Ile Thr Lys Glu		
850	855	860
Leu Lys Glu Leu Leu Glu Gln Lys Asp Asp Met Gln His Gln Val Leu		

865 870 875 880

Glu Arg Lys Tyr Cys Val Glu Leu Leu Asn Ser Ile Leu Glu Val Leu

885 890 895

Ser Tyr Gln Asp Ala Ala Phe Thr Tyr His His Ile Gln Glu Ile Met

900 905 910

Val Gln Leu Leu Arg Thr Val Asn Arg Thr Val Ile Thr Met Gly Arg

915 920 925

Asp His Ile Leu Ile Ser His Phe Val Ala Cys Met Thr Ala Ile Leu

930 935 940

Asn Gln Met Gly Asp Gln His Tyr Ser Phe Tyr Ile Glu Thr Phe Gln

945 950 955 960

Thr Ser Ser Glu Leu Val Asp Phe Leu Met Glu Thr Phe Ile Met Phe

965 970 975

Lys Asp Leu Ile Gly Lys Asn Val Tyr Pro Gly Asp Trp Met Ala Met

980 985 990

Ser Met Val Gln Asn Arg Val Phe Leu Arg Ala Ile Asn Lys Phe Ala

995 1000 1005

Glu Thr Met Asn Gln Lys Phe Leu Glu His Thr Asn Phe Glu Phe Gln

1010	1015	1020	
Leu Trp Asn Asn Tyr Phe His Leu Ala Val Ala Phe Ile Thr Gln Asp			
1025	1030	1035	1040
Ser Leu Gln Leu Glu Gln Phe Ser His Ala Lys Tyr Asn Lys Ile Leu			
1045	1050	1055	
Asn Lys Tyr Gly Asp Met Arg Arg Leu Ile Gly Phe Ser Ile Arg Asp			
1060	1065	1070	
Met Trp Tyr Lys Leu Gly Gln Asn Lys Ile Cys Phe Ile Pro Gly Met			
1075	1080	1085	
Val Gly Pro Ile Leu Glu Met Thr Leu Ile Pro Glu Ala Glu Leu Arg			
1090	1095	1100	
Lys Ala Thr Ile Pro Ile Phe Phe Asp Met Met Leu Cys Glu Tyr Gln			
1105	1110	1115	1120
Arg Ser Gly Asp Phe Lys Lys Phe Glu Asn Glu Ile Ile Leu Lys Leu			
1125	1130	1135	
Asp His Glu Val Glu Gly Gly Arg Gly Asp Glu Gln Tyr Met Gln Leu			
1140	1145	1150	
Leu Glu Ser Ile Leu Met Glu Cys Ala Ala Glu His Pro Thr Ile Ala			

1155	1160	1165		
Lys Ser Val Glu Asn Phe Val Asn Leu Val Lys Gly Leu Leu Glu Lys				
1170	1175	1180		
Leu Leu Asp Tyr Arg Gly Val Met Thr Asp Glu Ser Lys Asp Asn Arg				
1185	1190	1195	1200	
Met Ser Cys Thr Val Asn Leu Leu Asn Phe Tyr Lys Asp Asn Asn Arg				
	1205	1210	1215	
Glu Glu Met Tyr Ile Arg Tyr Leu Tyr Lys Leu Arg Asp Leu His Leu				
	1220	1225	1230	
Asp Cys Asp Asn Tyr Thr Glu Ala Ala Tyr Thr Leu Leu Leu His Thr				
	1235	1240	1245	
Trp Leu Leu Lys Trp Ser Asp Glu Gln Cys Ala Ser Gln Val Met Gln				
	1250	1255	1260	
Thr Gly Gln Gln His Pro Gln Thr His Arg Gln Leu Lys Glu Thr Leu				
	1265	1270	1275	1280
Tyr Glu Thr Ile Ile Gly Tyr Phe Asp Lys Gly Lys Met Trp Glu Glu				
	1285	1290	1295	
Ala Ile Ser Leu Cys Lys Glu Leu Ala Glu Gln Tyr Glu Met Glu Ile				

1300	1305	1310	
Phe Asp Tyr Glu Leu Leu Ser Gln Asn Leu Ile Gln Gln Ala Lys Phe			
1315	1320	1325	
Tyr Glu Ser Ile Met Lys Ile Leu Arg Pro Lys Pro Asp Tyr Phe Ala			
1330	1335	1340	
Val Gly Tyr Tyr Gly Gln Gly Phe Pro Ser Phe Leu Arg Asn Lys Val			
1345	1350	1355	1360
Phe Ile Tyr Arg Gly Lys Glu Tyr Glu Arg Arg Glu Asp Phe Gln Met			
1365	1370	1375	
Gln Leu Met Thr Gln Phe Pro Asn Ala Glu Lys Met Asn Thr Thr Ser			
1380	1385	1390	
Ala Pro Gly Asp Asp Val Lys Asn Ala Pro Gly Gln Tyr Ile Gln Cys			
1395	1400	1405	
Phe Thr Val Gln Pro Val Leu Asp Glu His Pro Arg Phe Lys Asn Lys			
1410	1415	1420	
Pro Val Pro Asp Gln Ile Ile Asn Phe Tyr Lys Ser Asn Tyr Val Gln			
1425	1430	1435	1440
Arg Phe His Tyr Ser Arg Pro Val Arg Arg Gly Thr Val Asp Pro Glu			

1445	1450	1455	
Asn Glu Phe Ala Ser Met Trp Ile Glu Arg Thr Ser Phe Val Thr Ala			
1460	1465	1470	
Tyr Lys Leu Pro Gly Ile Leu Arg Trp Phe Glu Val Val His Met Ser			
1475	1480	1485	
Gln Thr Thr Ile Ser Pro Leu Glu Asn Ala Ile Glu Thr Met Ser Thr			
1490	1495	1500	
Ala Asn Glu Lys Ile Leu Met Met Ile Asn Gln Tyr Gln Ser Asp Glu			
1505	1510	1515	1520
Thr Leu Pro Ile Asn Pro Leu Ser Met Leu Leu Asn Gly Ile Val Asp			
1525	1530	1535	
Pro Ala Val Met Gly Gly Phe Ala Lys Tyr Glu Lys Ala Phe Phe Thr			
1540	1545	1550	
Glu Glu Tyr Val Arg Asp His Pro Glu Asp Gln Asp Lys Leu Thr His			
1555	1560	1565	
Leu Lys Asp Leu Ile Ala Trp Gln Ile Pro Phe Leu Gly Ala Gly Ile			
1570	1575	1580	
Lys Ile His Glu Lys Arg Val Ser Asp Asn Leu Arg Pro Phe His Asp			

1585	1590	1595	1600
Arg Met Glu Glu Cys Phe Lys Asn Leu Lys Met Lys Val Glu Lys Glu			
1605	1610	1615	
Tyr Gly Val Arg Glu Met Pro Asp Phe Asp Asp Arg Arg Val Gly Arg			
1620	1625	1630	
Pro Arg Ser Met Leu Arg Ser Tyr Arg Gln Met Ser Ile Ile Ser Leu			
1635	1640	1645	
Ala Ser Met Asn Ser Asp Cys Ser Thr Pro Ser Lys Pro Thr Ser Glu			
1650	1655	1660	
Ser Phe Asp Leu Glu Leu Ala Ser Pro Lys Thr Pro Arg Val Glu Gln			
1665	1670	1675	1680
Glu Glu Pro Ile Ser Pro Gly Ser Thr Leu Pro Glu Val Lys Leu Arg			
1685	1690	1695	
Arg Ser Lys Lys Arg Thr Lys Arg Ser Ser Val Val Phe Ala Asp Glu			
1700	1705	1710	
Lys Ala Ala Ala Glu Ser Asp Leu Lys Arg Leu Ser Arg Lys His Glu			
1715	1720	1725	
Phe Met Ser Asp Thr Asn Leu Ser Glu His Ala Ala Ile Pro Leu Lys			

1730	1735	1740	
Ala Ser Val Leu Ser Gln Met Ser Phe Ala Ser Gln Ser Met Pro Thr			
1745	1750	1755	1760
Ile Pro Ala Leu Ala Leu Ser Val Ala Gly Ile Pro Gly Leu Asp Glu			
	1765	1770	1775
Ala Asn Thr Ser Pro Arg Leu Ser Gln Thr Phe Leu Gln Leu Ser Asp			
	1780	1785	1790
Gly Asp Lys Lys Thr Leu Thr Arg Lys Lys Val Asn Gln Phe Phe Lys			
	1795	1800	1805
Thr Met Leu Ala Ser Lys Ser Ala Glu Glu Gly Lys Gln Ile Pro Asp			
	1810	1815	1820
Ser Leu Ser Thr Asp Leu			
1825	1830		

<210> 3

<211> 727

<212> PRT

<213> Mus musculus

<400> 3

Met Pro Pro Pro Ser Asp Ile Val Lys Val Ala Ile Glu Trp Pro Gly
1 5 10 15

Ala Tyr Pro Lys Leu Met Glu Ile Asp Gln Lys Lys Pro Leu Ser Ala
20 25 30

Ile Ile Lys Glu Val Cys Asp Gly Trp Ser Leu Ala Asn His Glu Tyr
35 40 45

Phe Ala Leu Gln His Ala Asp Ser Ser Asn Phe Tyr Ile Thr Glu Lys
50 55 60

Asn Arg Asn Glu Ile Lys Asn Gly Thr Ile Leu Arg Leu Thr Thr Ser
65 70 75 80

Pro Ala Gln Asn Ala Gln Gln Leu His Glu Arg Ile Gln Ser Ser Ser
85 90 95

Met Asp Ala Lys Leu Glu Ala Leu Lys Asp Leu Ala Ser Leu Ser Arg
100 105 110

Asp Val Thr Phe Ala Gln Glu Phe Ile Asn Leu Asp Gly Ile Ser Leu
115 120 125

Leu Thr Gln Met Val Glu Ser Gly Thr Glu Arg Tyr Gln Lys Leu Gln
130 135 140

Lys Ile Met Lys Pro Cys Phe Gly Asp Met Leu Ser Phe Thr Leu Thr
145 150 155 160

Ala Phe Val Glu Leu Met Asp His Gly Ile Val Ser Trp Asp Thr Phe
165 170 175

Ser Val Ala Phe Ile Lys Lys Ile Ala Ser Phe Val Asn Lys Ser Ala
180 185 190

Ile Asp Ile Ser Ile Leu Gln Arg Ser Leu Ala Ile Leu Glu Ser Met
195 200 205

Val Leu Asn Ser His Asp Leu Tyr Gln Lys Val Ala Gln Glu Ile Thr
210 215 220

Ile Gly Gln Leu Ile Pro His Leu Gln Gly Thr Asp Gln Glu Ile Gln
225 230 235 240

Thr Tyr Thr Ile Ala Val Ile Asn Ala Leu Phe Leu Lys Ala Pro Asp
245 250 255

Glu Arg Arg Gln Glu Met Ala Asn Ile Leu Ala Gln Lys Gln Leu Arg
260 265 270

Tyr Ile Ile Leu Thr His Val Ile Arg Ala Gln Arg Ala Ile Asn Asn
275 280 285

Glu Met Ala His Gln Leu Tyr Val Leu Gln Val Leu Thr Phe Asn Leu
290 295 300

Leu Glu Asp Arg Met Met Thr Lys Met Asp Pro Gln Asp Gln Ala Gln
305 310 315 320

Arg Asp Ile Ile Phe Glu Leu Arg Arg Ile Ala Phe Asp Ala Glu Ser
325 330 335

Glu Pro Asn Asn Ser Ser Gly Ser Met Glu Lys Arg Lys Ser Met Tyr
340 345 350

Thr Arg Asp Tyr Lys Lys Leu Gly Phe Ile Asn His Val Asn Pro Ala
355 360 365

Met Asp Phe Thr Gln Thr Pro Pro Gly Met Leu Ala Leu Asp Asn Met
370 375 380

Leu Tyr Phe Ala Lys His His Gln Asp Ala Tyr Ile Arg Ile Val Leu
385 390 395 400

Glu Asn Ser Ser Arg Glu Asp Lys His Glu Cys Pro Phe Gly Arg Ser
405 410 415

Ser Ile Glu Leu Thr Lys Met Leu Cys Glu Ile Leu Lys Val Gly Glu
420 425 430

Leu Pro Ser Glu Thr Cys Asn Asp Phe His Pro Met Phe Phe Thr His
435 440 445

Asp Arg Ser Phe Glu Glu Phe Phe Cys Ile Cys Ile Gln Leu Leu Asn
450 455 460

Lys Thr Trp Lys Glu Met Arg Ala Thr Ser Glu Asp Phe Asn Lys Val
465 470 475 480

Met Gln Val Val Lys Glu Gln Val Met Arg Ala Leu Thr Thr Lys Pro
485 490 495

Ser Ser Leu Asp Gln Phe Lys Ser Lys Leu Gln Asn Leu Ser Tyr Thr
500 505 510

Glu Ile Leu Lys Ile Arg Gln Ser Glu Arg Met Asn Gln Glu Asp Phe
515 520 525

Gln Ser Arg Pro Ile Leu Glu Leu Lys Glu Lys Ile Gln Pro Glu Ile
530 535 540

Leu Glu Leu Ile Lys Gln Gln Arg Leu Asn Arg Leu Val Glu Gly Thr
545 550 555 560

Cys Phe Arg Lys Leu Asn Ala Arg Arg Arg Gln Asp Lys Phe Trp Tyr
565 570 575

Cys Arg Leu Ser Pro Asn His Lys Val Leu His Tyr Gly Asp Leu Glu
580 585 590

Glu Ser Pro Gln Gly Glu Val Pro His Asp Ser Leu Gln Asp Lys Leu
595 600 605

Pro Val Ala Asp Ile Lys Ala Val Val Thr Gly Lys Asp Cys Pro His
610 615 620

Met Lys Glu Lys Gly Ala Leu Lys Gln Asn Lys Glu Val Leu Glu Leu
625 630 635 640

Ala Phe Ser Ile Leu Tyr Asp Ser Asn Cys Gln Leu Asn Phe Ile Ala
645 650 655

Pro Asp Lys His Glu Tyr Cys Ile Trp Thr Asp Gly Leu Asn Ala Leu
660 665 670

Leu Gly Lys Asp Met Met Ser Asp Leu Thr Arg Asn Asp Leu Asp Thr
675 680 685

Leu Leu Ser Met Glu Ile Lys Leu Arg Leu Leu Asp Leu Glu Asn Ile
690 695 700

Gln Ile Pro Asp Ala Pro Pro Pro Ile Pro Lys Glu Pro Ser Asn Tyr
705 710 715 720

Asp Phe Val Tyr Asp Cys Asn

725

<210> 4

<211> 727

<212> PRT

<213> Homo sapiens

<400> 4

Met Pro Pro Pro Ala Asp Ile Val Lys Val Ala Ile Glu Trp Pro Gly

1

5

10

15

Ala Tyr Pro Lys Leu Met Glu Ile Asp Gln Lys Lys Pro Leu Ser Ala

20

25

30

Ile Ile Lys Glu Val Cys Asp Gly Trp Ser Leu Ala Asn His Glu Tyr

35

40

45

Phe Ala Leu Gln His Ala Asp Ser Ser Asn Phe Tyr Ile Thr Glu Lys

50

55

60

Asn Arg Asn Glu Ile Lys Asn Gly Thr Ile Leu Arg Leu Thr Thr Ser

65

70

75

80

Pro Ala Gln Asn Ala Gln Gln Leu His Glu Arg Ile Gln Ser Ser Ser

85

90

95

3 3 / 6 1

Met Asp Ala Lys Leu Glu Ala Leu Lys Asp Leu Ala Ser Leu Ser Arg

100

105

110

Asp Val Thr Phe Ala Gln Glu Phe Ile Asn Leu Asp Gly Ile Ser Leu

115

120

125

Leu Thr Gln Met Val Glu Ser Gly Thr Glu Arg Tyr Gln Lys Leu Gln

130

135

140

Lys Ile Met Lys Pro Cys Phe Gly Asp Met Leu Ser Phe Thr Leu Thr

145

150

155

160

Ala Phe Val Glu Leu Met Asp His Gly Ile Val Ser Trp Asp Thr Phe

165

170

175

Ser Val Ala Phe Ile Lys Lys Ile Ala Ser Phe Val Asn Lys Ser Ala

180

185

190

Ile Asp Ile Ser Ile Leu Gln Arg Ser Leu Ala Ile Leu Glu Ser Met

195

200

205

Val Leu Asn Ser His Asp Leu Tyr Gln Lys Val Ala Gln Glu Ile Thr

210

215

220

Ile Gly Gln Leu Ile Pro His Leu Gln Gly Ser Asp Gln Glu Ile Gln

225

230

235

240

Thr Tyr Thr Ile Ala Val Ile Asn Ala Leu Phe Leu Lys Ala Pro Asp
245 250 255

Glu Arg Arg Gln Glu Met Ala Asn Ile Leu Ala Gln Lys Gln Leu Arg
260 265 270

Ser Ile Ile Leu Thr His Val Ile Arg Ala Gln Arg Ala Ile Asn Asn
275 280 285

Glu Met Ala His Gln Leu Tyr Val Leu Gln Val Leu Thr Phe Asn Leu
290 295 300

Leu Glu Asp Arg Met Met Thr Lys Met Asp Pro Gln Asp Gln Ala Gln
305 310 315 320

Arg Asp Ile Ile Phe Glu Leu Arg Arg Ile Ala Phe Asp Ala Glu Ser
325 330 335

Glu Pro Asn Asn Ser Ser Gly Ser Met Glu Lys Arg Lys Ser Met Tyr
340 345 350

Thr Arg Asp Tyr Lys Lys Leu Gly Phe Ile Asn His Val Asn Pro Ala
355 360 365

Met Asp Phe Thr Gln Thr Pro Pro Gly Met Leu Ala Leu Asp Asn Met
370 375 380

Leu Tyr Phe Ala Lys His His Gln Asp Ala Tyr Ile Arg Ile Val Leu
385 390 395 400

Glu Asn Ser Ser Arg Glu Asp Lys His Glu Cys Pro Phe Gly Arg Ser
405 410 415

Ser Ile Glu Leu Thr Lys Met Leu Cys Glu Ile Leu Lys Val Gly Glu
420 425 430

Leu Pro Ser Glu Thr Cys Asn Asp Phe His Pro Met Phe Phe Thr His
435 440 445

Asp Arg Ser Phe Glu Glu Phe Phe Cys Ile Cys Ile Gln Leu Leu Asn
450 455 460

Lys Thr Trp Lys Glu Met Arg Ala Thr Ser Glu Asp Phe Asn Lys Val
465 470 475 480

Met Gln Val Val Lys Glu Gln Val Met Arg Ala Leu Thr Thr Lys Pro
485 490 495

Ser Ser Leu Asp Gln Phe Lys Ser Lys Leu Gln Asn Leu Ser Tyr Thr
500 505 510

Glu Ile Leu Lys Ile Arg Gln Ser Glu Arg Met Asn Gln Glu Asp Phe
515 520 525

Gln Ser Arg Pro Ile Leu Glu Leu Lys Glu Lys Ile Gln Pro Glu Ile

530

535

540

Leu Glu Leu Ile Lys Gln Gln Arg Leu Asn Arg Leu Val Glu Gly Thr

545

550

555

560

Cys Phe Arg Lys Leu Asn Ala Arg Arg Arg Gln Asp Lys Phe Trp Tyr

565

570

575

Cys Arg Leu Ser Pro Asn His Lys Val Leu His Tyr Gly Asp Leu Glu

580

585

590

Glu Ser Pro Gln Gly Glu Val Pro His Asp Ser Leu Gln Asp Lys Leu

595

600

605

Pro Val Ala Asp Ile Lys Ala Val Val Thr Gly Lys Asp Cys Pro His

610

615

620

Met Lys Glu Lys Gly Ala Leu Lys Gln Asn Lys Glu Val Leu Glu Leu

625

630

635

640

Ala Phe Ser Ile Leu Tyr Asp Ser Asn Cys Gln Leu Asn Phe Ile Ala

645

650

655

Pro Asp Lys His Glu Tyr Cys Ile Trp Thr Asp Gly Leu Asn Ala Leu

660

665

670

Leu Gly Lys Asp Met Met Ser Asp Leu Thr Arg Asn Asp Leu Asp Thr
675 680 685

Leu Leu Ser Met Glu Ile Lys Leu Arg Leu Leu Asp Leu Glu Asn Ile
690 695 700

Gln Ile Pro Asp Ala Pro Pro Pro Ile Pro Lys Glu Pro Ser Asn Tyr
705 710 715 720

Asp Phe Val Tyr Asp Cys Asn
725

<210> 5

<211> 1591

<212> PRT

<213> Mus musculus

<400> 5

Met Gly Asn Ala Glu Ser Gln Asn Val Asp His Glu Phe Tyr Gly Glu
1 5 10 15

Lys His Ala Ser Leu Gly Arg Lys His Thr Ser Arg Ser Leu Arg Leu
20 25 30

Ser His Lys Thr Arg Arg Thr Arg His Ala Ser Ser Gly Lys Ala Ile

35	40	45
His Arg Asn Ser Glu Val Ser Thr Arg Ser Ser Ser Thr Pro Ser Ile		
50	55	60
Pro Gln Ser Leu Ala Glu Asn Gly Leu Glu Pro Phe Ser Gln Glu Gly		
65	70	75 80
Ala Leu Asp Asp Phe Gly Asp Pro Ile Trp Val Asp Arg Val Asp Met		
85	90	95
Gly Leu Arg Pro Val Ser Tyr Thr Asp Ser Ser Val Thr Pro Ser Val		
100	105	110
Asp Gly Ser Ile Val Leu Thr Ala Ala Ser Val Gln Ser Met Pro Asp		
115	120	125
Ser Glu Glu Ser Arg Leu Tyr Gly Asp Asp Ala Thr Tyr Leu Ala Glu		
130	135	140
Gly Gly Arg Arg Gln Cys Pro Tyr Thr Ser Asn Gly Pro Thr Phe Met		
145	150	155 160
Glu Thr Ala Ser Phe Lys Lys Lys Arg Ser Lys Ser Ala Asp Ile Trp		
165	170	175
Arg Glu Asp Ser Leu Glu Phe Ser Leu Ser Asp Leu Ser Gln Glu His		

180	185	190	
Leu Thr Ser Asn Glu Glu Ile Leu Gly Ser Ala Glu Glu Lys Asp Cys			
195	200	205	
Glu Glu Ala Arg Gly Met Glu Thr Glu Ala Ser Pro Arg Gln Leu Ser			
210	215	220	
Thr Cys Gln Arg Ala Asn Ser Leu Gly Asp Leu Tyr Ala Gln Lys Asn			
225	230	235	240
Ser Gly Val Lys Ala Asn Gly Gly Pro Arg Asn Arg Phe Ser Ser Tyr			
245	250	255	
Cys Arg Asn Leu Val Ser Asp Ile Pro Asp Leu Ala Lys His Lys Met			
260	265	270	
Pro Pro Ala Ala Ala Glu Glu Thr Pro Pro Tyr Ser Asn Tyr Asn Thr			
275	280	285	
Leu Pro Cys Arg Lys Ser His Cys Leu Ser Glu Gly Ala Thr Asn Pro			
290	295	300	
Gln Ile Ser Leu Ser Lys Ser Met Gln Gly Arg Arg Ala Lys Thr Thr			
305	310	315	320
Gln Asp Val Asn Thr Gly Glu Gly Ser Glu Phe Ala Asp Ser Gly Ile			

	325	330	335
Glu Gly Ala Thr Thr Asp Thr Asp Leu Leu Ser Arg Arg Ser Asn Ala			
	340	345	350
Thr Asn Ser Ser Tyr Ser Pro Pro Thr Gly Arg Ala Phe Val Gly Ser			
	355	360	365
Asp Ser Gly Ser Ser Ser Thr Gly Asp Arg Ala Arg Gln Gly Val Tyr			
	370	375	380
Glu Asn Phe Arg Arg Glu Leu Glu Met Ser Thr Thr Asn Ser Glu Ser			
	385	390	395
			400
Leu Glu Glu Ala Gly Ser Ala His Ser Asp Glu Gln Ser Ser Gly Thr			
	405	410	415
Leu Ser Ser Pro Gly Gln Ser Asp Ile Leu Leu Thr Ala Ala Gln Gly			
	420	425	430
Thr Val Arg Lys Ala Gly Ala Leu Ala Val Lys Asn Phe Leu Val His			
	435	440	445
Lys Lys Asn Lys Lys Val Glu Ser Ala Thr Arg Arg Lys Trp Lys His			
	450	455	460
Tyr Trp Val Ser Leu Lys Gly Cys Thr Leu Phe Phe Tyr Glu Thr Asp			

465 470 475 480

Gly Arg Ser Gly Ile Asp His Asn Ser Val Pro Lys His Ala Val Trp

485 490 495

Val Glu Asn Ser Ile Val Gln Ala Val Pro Glu His Pro Lys Lys Asp

500 505 510

Phe Val Phe Cys Leu Ser Asn Ser Leu Gly Asp Ala Phe Leu Phe Gln

515 520 525

Thr Thr Ser Gln Thr Glu Leu Glu Asn Trp Ile Thr Ala Ile His Ser

530 535 540

Ala Cys Ala Ala Ala Val Ala Arg His His His Lys Glu Asp Thr Leu

545 550 555 560

Arg Leu Leu Lys Ser Glu Ile Lys Lys Leu Glu Gln Lys Ile Asp Met

565 570 575

Asp Glu Lys Met Lys Lys Met Gly Glu Met Gln Leu Ser Ser Val Thr

580 585 590

Asp Ser Lys Lys Lys Lys Thr Ile Leu Asp Gln Ile Phe Val Trp Glu

595 600 605

Gln Asn Leu Glu Gln Phe Gln Met Asp Leu Phe Arg Phe Arg Cys Tyr

610	615	620	
Leu Ala Ser Leu Gln Gly Gly Glu Leu Pro Asn Pro Lys Arg Leu Leu			
625	630	635	640
Ala Phe Ala Ser Arg Pro Thr Lys Val Ala Met Gly Arg Leu Gly Ile			
	645	650	655
Phe Ser Val Ser Ser Phe His Ala Leu Val Ala Ala Arg Thr Gly Glu			
	660	665	670
Ile Gly Val Arg Arg Arg Thr Gln Ala Met Ser Arg Ser Ala Ser Lys			
	675	680	685
Arg Arg Ser Arg Phe Ser Ser Leu Trp Gly Leu Asp Thr Thr Ser Lys			
	690	695	700
Lys Lys Gln Gly Arg Pro Thr Ile Asn Gln Val Phe Gly Glu Gly Thr			
705	710	715	720
Asp Ala Val Lys Arg Ser Leu Glu Gly Ile Phe Asp Asp Thr Val Pro			
	725	730	735
Asp Gly Lys Arg Glu Lys Glu Val Val Leu Pro Ser Val His Gln His			
	740	745	750
Asn Pro Asp Cys Asp Ile Trp Val His Glu Tyr Phe Thr Pro Ser Trp			

755	760	765
Phe Cys Leu Pro Asn Asn Gln Pro Ala Leu Thr Val Val Arg Pro Gly		
770	775	780
Asp Thr Ala Arg Asp Thr Leu Glu Leu Ile Cys Lys Thr His Gln Leu		
785	790	795 800
Asp His Ser Ala His Tyr Leu Arg Leu Lys Phe Leu Met Glu Asn Arg		
805	810	815
Val Gln Phe Tyr Ile Pro Gln Pro Glu Glu Asp Ile Tyr Glu Leu Leu		
820	825	830
Tyr Lys Glu Ile Glu Ile Cys Pro Lys Val Thr Gln Asn Ile His Ile		
835	840	845
Glu Lys Ser Asp Ala Ala Ala Asp Asn Tyr Gly Phe Leu Leu Ser Ser		
850	855	860
Val Asp Glu Asp Gly Ile Arg Arg Leu Tyr Val Asn Ser Val Lys Glu		
865	870	875 880
Thr Gly Leu Ala Ser Lys Lys Gly Leu Lys Ala Gly Asp Glu Ile Leu		
885	890	895
Glu Ile Asn Asn Arg Ala Ala Gly Thr Leu Asn Ser Ser Met Leu Lys		

900	905	910
Asp Phe Leu Ser Gln Pro Ser Leu Gly Leu Leu Val Arg Thr Tyr Pro		
915	920	925
Glu Pro Glu Gly Gly Val Glu Leu Leu Glu Asn Pro Pro His Arg Val		
930	935	940
Asp Gly Pro Val Asp Leu Gly Glu Ser Pro Leu Ala Phe Leu Thr Ser		
945	950	955
		960
Asn Pro Gly His Ser Leu Ser Ser Glu Gln Gly Ser Ser Ala Glu Thr		
965	970	975
Ala Pro Glu Glu Gly Glu Gly Pro Asp Leu Glu Ser Ser Asp Glu Thr		
980	985	990
Asp His Ser Ser Lys Ser Thr Glu Gln Val Ala Ala Phe Cys Arg Ser		
995	1000	1005
Leu His Glu Met Ser Pro Ser Asp Ser Ser Pro Ser Pro Gln Asp Ala		
1010	1015	1020
Thr Ser Pro Gln Leu Ala Thr Thr Arg Gln Leu Ser Asp Ala Asp Lys		
1025	1030	1035
		1040
Leu Arg Lys Val Ile Cys Glu Leu Leu Glu Thr Glu Arg Thr Tyr Val		

1045	1050	1055
Lys Asp Leu Asn Cys Leu Met Glu Arg Tyr Leu Lys Pro Leu Gln Lys		
1060	1065	1070
Glu Thr Phe Leu Thr Gln Asp Glu Leu Asp Val Leu Phe Gly Asn Leu		
1075	1080	1085
Thr Glu Met Val Glu Phe Gln Val Glu Phe Leu Lys Thr Leu Glu Asp		
1090	1095	1100
Gly Val Arg Leu Val Pro Asp Leu Glu Lys Leu Glu Lys Val Asp Gln		
1105	1110	1115
Phe Lys Lys Val Leu Phe Ser Leu Gly Gly Ser Phe Leu Tyr Tyr Ala		
1125	1130	1135
Asp Arg Phe Lys Leu Tyr Ser Ala Phe Cys Ala Ser His Thr Lys Val		
1140	1145	1150
Pro Lys Val Leu Val Lys Ala Lys Thr Asp Thr Ala Phe Lys Ala Phe		
1155	1160	1165
Leu Asp Ala Gln Asn Pro Arg Gln Gln His Ser Ser Thr Leu Glu Ser		
1170	1175	1180
Tyr Leu Ile Lys Pro Ile Gln Arg Val Leu Lys Tyr Pro Leu Leu Leu		

1185	1190	1195	1200
Arg Glu Leu Phe Ala Leu Thr Asp Ala Glu Ser Glu Glu His Tyr His			
	1205	1210	1215
Leu Asp Val Ala Ile Lys Thr Met Asn Lys Val Ala Ser His Ile Asn			
	1220	1225	1230
Glu Met Gln Lys Ile His Glu Glu Phe Gly Ala Val Phe Asp Gln Leu			
	1235	1240	1245
Ile Ala Glu Gln Thr Gly Glu Lys Lys Glu Val Ala Asp Leu Ser Met			
	1250	1255	1260
Gly Asp Leu Leu Leu His Thr Ser Val Ile Trp Leu Asn Pro Pro Ala			
	1265	1270	1275
		1280	
Ser Leu Gly Lys Trp Lys Lys Glu Pro Glu Leu Ala Ala Phe Val Phe			
	1285	1290	1295
Lys Thr Ala Val Val Leu Val Tyr Lys Asp Gly Ser Lys Gln Lys Lys			
	1300	1305	1310
Lys Leu Val Gly Ser His Arg Leu Ser Ile Tyr Glu Glu Trp Asp Pro			
	1315	1320	1325
Phe Arg Phe Arg His Met Ile Pro Thr Glu Ala Leu Gln Val Arg Ala			

1330	1335	1340	
Leu Pro Ser Ala Asp Ala Glu Ala Asn Ala Val Cys Glu Ile Val His			
1345	1350	1355	1360
Val Lys Ser Glu Ser Glu Gly Arg Pro Glu Arg Val Phe His Leu Cys			
	1365	1370	1375
Cys Ser Ser Pro Glu Ser Arg Lys Asp Phe Leu Lys Ser Val His Ser			
	1380	1385	1390
Ile Leu Arg Asp Lys His Arg Arg Gln Leu Leu Lys Thr Glu Ser Leu			
	1395	1400	1405
Pro Ser Ala Gln Gln Tyr Val Pro Phe Gly Gly Lys Arg Leu Cys Ala			
	1410	1415	1420
Leu Lys Gly Ala Arg Pro Ala Met Ser Arg Ala Val Ser Ala Pro Ser			
1425	1430	1435	1440
Lys Ser Leu Gly Arg Arg Arg Arg Arg Leu Ala Arg Asn Arg Phe Thr			
	1445	1450	1455
Ile Asp Ser Asp Ala Ile Ser Ala Ser Ser Pro Glu Lys Glu Pro Gln			
	1460	1465	1470
Gln Pro Ala Gly Gly Gly Asp Thr Asp Arg Trp Val Glu Glu Gln Phe			

1475	1480	1485	
Asp Leu Ala Gln Tyr Glu Glu Gln Asp Asp Ile Lys Glu Thr Asp Ile			
1490	1495	1500	
Leu Ser Asp Asp Asp Glu Phe Cys Glu Ser Leu Lys Gly Ala Ser Val			
1505	1510	1515	1520
Asp Arg Asp Leu Gln Glu Gln Leu Gln Ala Ala Ser Ile Ser Gln Arg			
	1525	1530	1535
Ala Arg Gly Arg Arg Thr Leu Asp Ser His Ala Ser Arg Met Thr Gln			
	1540	1545	1550
Leu Lys Lys Gln Ala Ala Leu Ser Gly Ile Asn Gly Gly Leu Glu Ser			
	1555	1560	1565
Ala Ser Glu Glu Val Ile Trp Val Arg Arg Glu Asp Phe Ala Pro Ser			
	1570	1575	1580
Arg Lys Leu Asn Thr Glu Ile			
	1585	1590	

<210> 6
 <211> 1591
 <212> PRT

<213> Homo sapiens

<400> 6

Met Gly Asn Ala Glu Ser Gln His Val Glu His Glu Phe Tyr Gly Glu
1 5 10 15

Lys His Ala Ser Leu Gly Arg Asn Asp Thr Ser Arg Ser Leu Arg Leu
20 25 30

Ser His Lys Thr Arg Arg Thr Arg His Ala Ser Ser Gly Lys Val Ile
35 40 45

His Arg Asn Ser Glu Val Ser Thr Arg Ser Ser Ser Thr Pro Ser Ile
50 55 60

Pro Gln Ser Leu Ala Glu Asn Gly Leu Glu Pro Phe Ser Gln Asp Gly
65 70 75 80

Thr Leu Glu Asp Phe Gly Ser Pro Ile Trp Val Asp Arg Val Asp Met
85 90 95

Gly Leu Arg Pro Val Ser Tyr Thr Asp Ser Ser Val Thr Pro Ser Val
100 105 110

Asp Ser Ser Ile Val Leu Thr Ala Ala Ser Val Gln Ser Met Pro Asp
115 120 125

Thr Glu Glu Ser Arg Leu Tyr Gly Asp Asp Ala Thr Tyr Leu Ala Glu
130 135 140

Gly Gly Arg Arg Gln His Ser Tyr Thr Ser Asn Gly Pro Thr Phe Met
145 150 155 160

Glu Thr Ala Ser Phe Lys Lys Lys Arg Ser Lys Ser Ala Asp Ile Trp
165 170 175

Arg Glu Asp Ser Leu Glu Phe Ser Leu Ser Asp Leu Ser Gln Glu His
180 185 190

Leu Thr Ser Asn Glu Glu Ile Leu Gly Ser Ala Glu Glu Lys Asp Cys
195 200 205

Glu Glu Ala Arg Gly Met Glu Thr Arg Ala Ser Pro Arg Gln Leu Ser
210 215 220

Thr Cys Gln Arg Ala Asn Ser Leu Gly Asp Leu Tyr Ala Gln Lys Asn
225 230 235 240

Ser Gly Val Thr Ala Asn Met Gly Pro Gly Ser Lys Phe Ala Gly Tyr
245 250 255

Cys Arg Asn Leu Val Ser Asp Ile Pro Asn Leu Ala Asn His Lys Met
260 265 270

Pro Pro Ala Ala Ala Glu Glu Thr Pro Pro Tyr Ser Asn Tyr Asn Thr
275 280 285

Leu Pro Cys Arg Lys Ser His Cys Leu Ser Glu Gly Ala Thr Asn Pro
290 295 300

Gln Ile Ser His Ser Asn Ser Met Gln Gly Arg Arg Ala Lys Thr Thr
305 310 315 320

Gln Asp Val Asn Ala Gly Glu Gly Ser Glu Phe Ala Asp Ser Gly Ile
325 330 335

Glu Gly Ala Thr Thr Asp Thr Asp Leu Leu Ser Arg Arg Ser Asn Ala
340 345 350

Thr Asn Ser Ser Tyr Ser Pro Thr Thr Gly Arg Ala Phe Val Gly Ser
355 360 365

Asp Ser Gly Ser Ser Ser Thr Gly Asp Ala Ala Arg Gln Gly Val Tyr
370 375 380

Glu Asn Phe Arg Arg Glu Leu Glu Met Ser Thr Thr Asn Ser Glu Ser
385 390 395 400

Leu Glu Glu Ala Gly Ser Ala His Ser Asp Glu Gln Ser Ser Gly Thr
405 410 415

Leu Ser Ser Pro Gly Gln Ser Asp Ile Leu Leu Thr Ala Ala Gln Gly
420 425 430

Thr Val Arg Lys Ala Gly Ala Leu Ala Val Lys Asn Phe Leu Val His
435 440 445

Lys Lys Asn Lys Lys Val Glu Ser Ala Thr Arg Arg Lys Trp Lys His
450 455 460

Tyr Trp Val Ser Leu Lys Gly Cys Thr Leu Phe Phe Tyr Glu Ser Asp
465 470 475 480

Gly Arg Ser Gly Ile Asp His Asn Ser Ile Pro Lys His Ala Val Trp
485 490 495

Val Glu Asn Ser Ile Val Gln Ala Val Pro Glu His Pro Lys Lys Asp
500 505 510

Phe Val Phe Cys Leu Ser Asn Ser Leu Gly Asp Ala Phe Leu Phe Gln
515 520 525

Thr Thr Ser Gln Thr Glu Leu Glu Asn Trp Ile Thr Ala Ile His Ser
530 535 540

Ala Cys Ala Thr Ala Val Ala Arg His His His Lys Glu Asp Thr Leu
545 550 555 560

Arg Leu Leu Lys Ser Glu Ile Lys Lys Leu Glu Gln Lys Ile Asp Met
565 570 575

Asp Glu Lys Met Lys Lys Met Gly Glu Met Gln Leu Ser Ser Val Thr
580 585 590

Asp Ser Lys Lys Lys Lys Thr Ile Leu Asp Gln Ile Phe Val Trp Glu
595 600 605

Gln Asn Leu Glu Gln Phe Gln Met Asp Leu Phe Arg Phe Arg Cys Tyr
610 615 620

Leu Ala Ser Leu Gln Gly Gly Glu Leu Pro Asn Pro Lys Arg Leu Leu
625 630 635 640

Ala Phe Ala Ser Arg Pro Thr Lys Val Ala Met Gly Arg Leu Gly Ile
645 650 655

Phe Ser Val Ser Ser Phe His Ala Leu Val Ala Ala Arg Thr Gly Glu
660 665 670

Thr Gly Val Arg Arg Arg Thr Gln Ala Met Ser Arg Ser Ala Ser Lys
675 680 685

Arg Arg Ser Arg Phe Ser Ser Leu Trp Gly Leu Asp Thr Thr Ser Lys
690 695 700

Lys Lys Gln Gly Arg Pro Ser Ile Asn Gln Val Phe Gly Glu Gly Thr
705 710 715 720

Glu Ala Val Lys Lys Ser Leu Glu Gly Ile Phe Asp Asp Ile Val Pro
725 730 735

Asp Gly Lys Arg Glu Lys Glu Val Val Leu Pro Asn Val His Gln His
740 745 750

Asn Pro Asp Cys Asp Ile Trp Val His Glu Tyr Phe Thr Pro Ser Trp
755 760 765

Phe Cys Leu Pro Asn Asn Gln Pro Ala Leu Thr Val Val Arg Pro Gly
770 775 780

Asp Thr Ala Arg Asp Thr Leu Glu Leu Ile Cys Lys Thr His Gln Leu
785 790 795 800

Asp His Ser Ala His Tyr Leu Arg Leu Lys Phe Leu Ile Glu Asn Lys
805 810 815

Met Gln Leu Tyr Val Pro Gln Pro Glu Glu Asp Ile Tyr Glu Leu Leu
820 825 830

Tyr Lys Glu Ile Glu Ile Cys Pro Lys Val Thr His Ser Ile His Ile
835 840 845

Glu Lys Ser Asp Thr Ala Ala Asp Thr Tyr Gly Phe Ser Leu Ser Ser
850 855 860

Val Glu Glu Asp Gly Ile Arg Arg Leu Tyr Val Asn Ser Val Lys Glu
865 870 875 880

Thr Gly Leu Ala Ser Lys Lys Gly Leu Lys Ala Gly Asp Glu Ile Leu
885 890 895

Glu Ile Asn Asn Arg Ala Ala Asp Ala Leu Asn Ser Ser Met Leu Lys
900 905 910

Asp Phe Leu Ser Gln Pro Ser Leu Gly Leu Leu Val Arg Thr Tyr Pro
915 920 925

Glu Leu Glu Glu Gly Val Glu Leu Leu Glu Ser Pro Pro His Arg Val
930 935 940

Asp Gly Pro Ala Asp Leu Asp Glu Ser Pro Leu Ala Phe Leu Thr Ser
945 950 955 960

Asn Pro Gly His Ser Leu Cys Ser Glu Gln Gly Ser Ser Ala Glu Thr
965 970 975

Ala Pro Glu Glu Thr Glu Gly Pro Asp Leu Glu Ser Ser Asp Glu Thr
980 985 990

Asp His Ser Ser Lys Ser Thr Glu Gln Val Ala Ala Phe Cys Arg Ser
995 1000 1005

Leu His Glu Met Asn Pro Ser Asp Gln Asn Pro Ser Pro Gln Asp Ser
1010 1015 1020

Thr Gly Pro Gln Leu Ala Thr Met Arg Gln Leu Ser Asp Ala Asp Asn
1025 1030 1035 1040

Val Arg Lys Val Ile Cys Glu Leu Leu Glu Thr Glu Arg Thr Tyr Val
1045 1050 1055

Lys Asp Leu Asn Cys Leu Met Glu Arg Tyr Leu Lys Pro Leu Gln Lys
1060 1065 1070

Glu Thr Phe Leu Thr Gln Asp Glu Leu Asp Val Leu Phe Gly Asn Leu
1075 1080 1085

Thr Glu Met Val Glu Phe Gln Val Glu Phe Leu Lys Thr Leu Glu Asp
1090 1095 1100

Gly Val Arg Leu Val Pro Asp Leu Glu Lys Leu Glu Lys Val Asp Gln
1105 1110 1115 1120

Phe Lys Lys Val Leu Phe Ser Leu Gly Gly Ser Phe Leu Tyr Tyr Ala
1125 1130 1135

Asp Arg Phe Lys Leu Tyr Ser Ala Phe Cys Ala Ile His Thr Lys Val

1140

1145

1150

Pro Lys Val Leu Val Lys Ala Lys Thr Asp Thr Ala Phe Lys Ala Phe

1155

1160

1165

Leu Asp Ala Gln Asn Pro Lys Gln Gln His Ser Ser Thr Leu Glu Ser

1170

1175

1180

Tyr Leu Ile Lys Pro Ile Gln Arg Ile Leu Lys Tyr Pro Leu Leu Leu

1185

1190

1195

1200

Arg Glu Leu Phe Ala Leu Thr Asp Ala Glu Ser Glu Glu His Tyr His

1205

1210

1215

Leu Asp Val Ala Ile Lys Thr Met Asn Lys Val Ala Ser His Ile Asn

1220

1225

1230

Glu Met Gln Lys Ile His Glu Glu Phe Gly Ala Val Phe Asp Gln Leu

1235

1240

1245

Ile Ala Glu Gln Thr Gly Glu Lys Lys Glu Val Ala Asp Leu Ser Met

1250

1255

1260

Gly Asp Leu Leu Leu His Thr Thr Val Ile Trp Leu Asn Pro Pro Ala

1265

1270

1275

1280

Ser Leu Gly Lys Trp Lys Lys Glu Pro Glu Leu Ala Ala Phe Val Phe
1285 1290 1295

Lys Thr Ala Val Val Leu Val Tyr Lys Asp Gly Ser Lys Gln Lys Lys
1300 1305 1310

Lys Leu Val Gly Ser His Arg Leu Ser Ile Tyr Glu Asp Trp Asp Pro
1315 1320 1325

Phe Arg Phe Arg His Met Ile Pro Thr Glu Ala Leu Gln Val Arg Ala
1330 1335 1340

Leu Ala Ser Ala Asp Ala Glu Ala Asn Ala Val Cys Glu Ile Val His
1345 1350 1355 1360

Val Lys Ser Glu Ser Glu Gly Arg Pro Glu Arg Val Phe His Leu Cys
1365 1370 1375

Cys Ser Ser Pro Glu Ser Arg Lys Asp Phe Leu Lys Ala Val His Ser
1380 1385 1390

Ile Leu Arg Asp Lys His Arg Arg Gln Leu Leu Lys Thr Glu Ser Leu
1395 1400 1405

Pro Ser Ser Gln Gln Tyr Val Pro Phe Gly Gly Lys Arg Leu Cys Ala
1410 1415 1420

Leu Lys Gly Ala Arg Pro Ala Met Ser Arg Ala Val Ser Ala Pro Ser
1425 1430 1435 1440

Lys Ser Leu Gly Arg Arg Arg Arg Arg Leu Ala Arg Asn Arg Phe Thr
1445 1450 1455

Ile Asp Ser Asp Ala Val Ser Ala Ser Ser Pro Glu Lys Glu Ser Gln
1460 1465 1470

Gln Pro Pro Gly Gly Gly Asp Thr Asp Arg Trp Val Glu Glu Gln Phe
1475 1480 1485

Asp Leu Ala Gln Tyr Glu Glu Gln Asp Asp Ile Lys Glu Thr Asp Ile
1490 1495 1500

Leu Ser Asp Asp Asp Glu Phe Cys Glu Ser Val Lys Gly Ala Ser Val
1505 1510 1515 1520

Asp Arg Asp Leu Gln Glu Arg Leu Gln Ala Thr Ser Ile Ser Gln Arg
1525 1530 1535

Glu Arg Gly Arg Lys Thr Leu Asp Ser His Ala Ser Arg Met Ala Gln
1540 1545 1550

Leu Lys Lys Gln Ala Ala Leu Ser Gly Ile Asn Gly Gly Leu Glu Ser
1555 1560 1565

Ala Ser Glu Glu Val Ile Trp Val Arg Arg Glu Asp Phe Ala Pro Ser
1570 1575 1580

Arg Lys Leu Asn Thr Glu Ile
1585 1590

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<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:HA-tag

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Tyr Pro Tyr Asp Val Pro Asp Tyr Ala

1

5